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A GUIDE

—TO—

Successful Fruit Culture,

EMBODYING

Such information as the farmer and gardener requires in the management of Fruit Trees and Plants, with special instructions for the varieties usually grown in our country.

BY BEN A. MORRIS, NURSERYMAN,
CANTON, INDIANA.

DEMOCRAT STEAM PRINT, SALEM, INDIANA.
1877.

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INTRODUCTION.

There are some general rules which may be applied to the planting and subsequent management of nearly all fruit trees. Some principles you may trace in the growth of all deciduous plants. And a common sense application of the rule to the needs involved in the principle, would save to the country thousands of trees, the farmer from loss and disappointment, and the nurseryman a great deal of unjust criticism, and promote a rapid and legitimate increase of business. To these ends we have devoted the following pages.

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GENERAL INSTRUCTIONS

FOR

Pruning, Planting, and Cultivation.

PRUNING.

There is a striking resemblance in the head and roots of a tree. Each grows with the other, and about in the same proportion. As the limbs reach out from the body they become large, strong and smooth, in that part which forms the connection of the trunk with the extremities; while the twigs, from which grow the wood and fruit buds, cluster about the ends of the branches, thus increasing in the right direction, and in rapid proportion, the fruit-bearing capacity of the tree. The same habit of growth occurs in the root. The fibrous roots, or "feeders," from which the leaves draw the food to maintain the growth of tree and fruit, will be found at the terminal extremity of the larger roots. The part which connects the fibres and the body, or stump of the tree, becomes hard and smooth, and of small absorbing capacity, In the comparative size of the roots and branches there will be found a close resemblance, while the strength of each is beautifully adjusted to the necessity of increased resistance to the storm. The trunk or body is an independent member, with no corresponding part, the only office of which is to support the head, and convey from one to the other what is required for the support of the tree; and so perfectly and rapidly does it perform this function, that a great length, or even a serious injury, depriving it of half of its substance, seems scarcely to retard the temporary growth of tree or perfection of fruit.

The growth of a fruit tree, under favorable circumstances of soil and culture, is very rapid. In the two or three years of their nursery life the roots often reach entirely across the space between the rows. Hence in digging it is simply impossible to take them up

without in some degree mutilating them, and often seriously; and this is oftener the case with the strong, thrifty growing trees than with the weaker varieties. Both roots and limbs possess the power of remaining temporarily dormant, the roots in a greater degree than the branches; but in either case it impairs the vitality of the tree, hence the necessity of reducing the head until it will correspond with the already shortened roots. This constitutes the operation of pruning.

Experience has demonstrated the advantages of a head of medium height. This has created a popular demand for this class of trees, hence the nurseryman places them upon the market. If the height meets your approval, the operation of trimming is simple, to-wit: Cut the limbs back to about one-half their length, pare off smoothly the ends of the large roots, if bruised, and plant according to instructions hereafter given. If you want a higher head, cut off all the limbs except the straightest, upright shoot, keep all limbs below the desired head pinched in to three inches till the 1st of September, when they may be cut off close to the tree, leaving only those you wish to grow. Your tree will then form a well ballanced head, in exact proportion to the reduced vitality of the roots. If, however, you want a lower head than the tree has as it comes to you, cut off the body just above where you intend to start your limbs. When there is sufficient growth from which to select a head, cut off all surplus growth, and if your branches become too long and slender, pinch off the ends, which will cause them to thicken up and throw out lateral shoots. In all future pruning the object should be to keep the head *open*, to admit light and air freely; keep off all water sprouts, allowing only the natural growth at the ends of the branches. This will secure a uniform growth of bearing wood, and a succession of moderate, healthy crops of fruit equally distributed throughout the tree.

It is an old saying among fruit men, "Prune when the knife is sharp." The knife should always be sharp, but there is some difference in the healing power of the tree at different seasons. Winter pruned trees are liable to some injury by frost, when it becomes necessary to shorten in the stump later in the season, and is sometimes followed by the dying out of the central wood or "heart," and the final destruction of the tree by "dry rot." To avoid this and secure the rapid healing of the wound, do your trimming at any time after the leaves begin to mature (which occurs from the 1st to the middle of June), until late in August or the 1st of September, and the larger the tree or the limbs to be cut off, the earlier in this season should your trimming be done, though if very closely watched and cut in time, it will seldom be found necessary to sever a large limb.

Early in the spring your trees should have an application of weak lye, or thin soft soap, applied with a whitewash brush to the lower limbs and body. This will destroy the germ of many insects injurious to the tree and fruit, and secure that bright, healthy growth of bark so often seen and admired in the orchards of successful fruit growers, and add much to the vitality and healthfulness of the tree. The foregoing remarks apply specially to the apple, and generally to other varieties, except where instructions are given applicable to each particular case.

PLANTING.

Every year millions of plants are shipped from Europe to America. Their freedom from blight makes them more desirable as stocks upon which to graft our improved varieties, than American grown seedlings. The roots of nearly all your standard Pear and cherry and dwarf apple trees are from seedlings grown in France. These are taken up, freed from soil and *packed in perfectly dry moss*, in which condition they are shipped to this country. The ocean voyage occupies ten to twenty days, and they are often an equal length of time reaching their inland destination, in all from three to five weeks, surrounded by a packing material in which when opened you can detect scarcely a trace of moisture. Sometimes there is a perceptible shrinkage of bark, but when carefully planted in the nursery rows, they grow promptly and vigorously, seeming to recover without an effort from the shock of their trans-Atlantic voyage.

Apple grafts, grafted early in the winter, keep in the finest condition packed in dry sawdust, and some propagators use for this purpose kiln-dried sand, and claim superior advantages for it. And to take the whole range of nursery planting and transplanting, it is *the rule that plants grow*; and yet thousands of the same and higher grades of trees, with less exposure than usually attends their removal in the nursery, die upon the hands of farmers who buy them, and the nurseryman, who would have handled the same stock, under the same conditions, with entire success, is severely censured for the loss. The reason is two-fold: First, farmers are, in many cases, ignorant of the first principles of plant growth, consequently of the simplest rules which should govern them in the setting of trees. Second, because such information as has been published has been more theoretical than practical, and couched in technical language familiar only to fruit men. One man will tell you to press the earth gently about the roots with the hand, and another will say, cover the roots with earth and then pour on water

till all is thoroughly wet; either of which plans is open to serious objections (hereafter explained), and would insure heavy loss except under the most favorable circumstances.

Try to pull with the hands a small tree which has been undisturbed in its growth from the seed, and you will be surprised how firmly it is held in the ground. The soil has yielded to the pressure of root growth until it is literally packed around them, and the little rootlets have extended far from the body and branched out in a thousand directions. This is the natural growth of the tree, and if you cut off the fibrous roots, leaving only the larger, smooth part next to the body, the closely packed earth is ready to receive the tender roots starting from the dormant buds, and with little intermission continue the growth of the tree. To imitate this is the key to successful planting; and to accomplish it the nurseryman finds the "hand pressure" entirely inadequate, and in many cases the entire weight of the body upon the foot, and where *particular* care is required, resorts to the "tamper," and plants his tender tree as he would set a fence post; and his success in all his planting depends mainly upon the firm packing of fine earth about the roots. Bedding plants—for instance, sprouts from the peach seed—though readily pulled from the bed in which they have sprouted, to insure success, must be so firmly planted in the field that the plant will "pull into" sooner than come out of the ground; and when thus planted, though sometimes in *very dry soil*, the loss is usually very small.

The pouring on of water is replaced by the "puddle," which is simply a mixture of fine earth and water, thin enough to reach every fibre and cavity when plunged in, and thick enough to adhere plentifully to the roots. This completely protects the root from the air, and furnishes sufficient moisture to sustain the vitality of the tree until started, while the natural moisture of the freshly dug soil is at all times sufficient to meet the natural demands of the tree at the proper season for planting. Pouring water upon the roots will always leave more or less of a hard, dry cake, after its absorbtion or evaporation, with very small absorbing capacity, almost impervious to root growth near the tree, and with cavities at its extremities through which roots will hardly try to pass. Trees as you receive them have had little exposure, and are generally in good condition, often only a few hours, at most a few days, out of the ground. If boxed they may often be left safely for a week without removal. If open and you are not ready to plant them *puddle the roots* and heel them in, which is simply covering the roots with fine, moist earth. If by any unusual exposure the bark is shriveled, cover them up, body, limb and all, in moist earth until plump and fresh again, which will be in a short time.

When ready to plant, dig your hole a foot larger each way and *a foot deeper* than the roots of the tree intended for it. If your soil is not naturally good, it is best to replace it with a fine rich soil, similar to that of which your orchard is composed, but with no mixture of manure or any light stuff of any kind. Then shape your hole to fit the roots intended for it. To say a small mound in the centre would not apply to a majority of cases, because perhaps one-half of the nursery fruit trees you buy have a tap root, which if uninjured is a great advantage to the tree, and ought to be encouraged and accommodated, as it reaches down to a point beyond the influence of drouth, and interferes in no way with the functions of other roots. For this reason we say dig a foot deeper than would accommodate the tree, to encourage a growth of vertical roots which, when once started, extend often to a great depth through moist subsoil for moisture alone, and greatly enhance the life and fruitfulness of the tree. Now *puddle the roots;* set your tree at about its original depth, and fill in with finely pulverized soil, tapping the body gently to settle the earth about the roots, and when they are covered tramp it firmly with the foot, seeing that you do not bruise the roots. Fill up and tramp again until level with the surrounding surface; then bank up lightly and with little pressure with the earth first taken out, two or three inches deep, about the body, grading down to the size of hole, making it rather larger than smaller, and then MULCH. I wish we could say this to and impress every man who buys a tree with its unequaled importance in all the processes of culture, for among them all no *one* thing will so nearly atone for every error, and save the life of a tree when you have failed to do it justice in any other way. To mulch is to cover the ground with any material which will shield it from the drying influence of sun and wind, and admit rain. To mulch properly is to cover with something which will accomplish this, and gradually decomposing, furnish plant food for the tree. Those giants of vegetable growth, our forest trees, do this by the annual shedding of leaves, and the great benefit derived from it may be plainly seen in the stunted growth of the few isolated specimens, where a large forest has been removed. The scattering growth of orchard trees defeats this natural provision, hence the great necessity of providing artificial protection, and do it immediately. Old straw is good, well rotted manure is best; spent tan, old sawdust, blacksmith's parings and filings, any of them will do, and the poorest vastly better than nothing. But mulch two to four inches deep, and three feet out from the tree, and renew as often as misplaced, clearing off occasionally to destroy all weeds germinating beneath, until a suitable time to allow your ground to sod, when it will be in the finest condition for a luxuriant set of grass.

In the season for planting there is little choice as to favorable results. A tree *well* planted at any time, except when in full foliage, has nearly all the chances in its favor. If giving either the choice, however, embracing all kinds of stock, we would say spring. We have seen five hundred peach trees planted when nearly in full leaf, with a loss of only twenty trees, or four to the hundred; and all things considered, spring planting is probably attended with the best results. But it is an established fact that trees are safer from exposure to frost when dug in the fall and "heeled in," than when left standing as they grew, hence the advantage of buying in the fall. The heeling should be well done, the trees set somewhat below their nursery depth, and the earth thrown up around them to a height of four to six inches more. This completely protects that part of the tree from which we can obtain a strong, healthy growth, if killed above, and from their close grouping together affords a general protection to the whole tree.

During the excessive cold of the winter of 1876–7, there were several thousand peach trees heeled in, as above, under our observation. These trees came through the winter fresh and sound, while others around them in rows, with equal though no greater exposure, were killed to the ground.

CULTIVATION.

The elements entering into the life of a tree or plant are obtained in three ways. 1st, by absorption from the soil; 2d, by absorption from the air; and 3d, by the chemical action of the sun's rays upon them while retained within the cellular tissue of the plant. Of these we can control only the action of the soil, and through it assist or retard the influence of air and sunlight. Far the largest portion is absorbed through the medium of the soil, from which it is taken up as a solution in water by the roots, carried by cappilary action through the body and limbs to every part of the tree, and left by the rapid evaporation of water from the leaves to complete the maturity of cell formation, or return in the later periods of growth, to fill these same cells with wood, and thus annually add to a system which reaches maturity when the tree has arrived at the period of full fruitfulness, when the formation of fruit buds and fruit creates a new demand, dividing with, and to some extent replacing the wood growth of previous years. Every farmer has seen the quick withering of leaves, upon deadening a tree in early summer, when exposed to the direct influence of full sunlight. In the act of "deadening" the flow of sap from the roots is cut off. The process of evaporation is at an end, for the want of something

to evaporate, and the leaves wither and droop because the water which has constantly filled and extended their porous structure in its passage from the roots to the air, is no longer supplied. Thus the tree is constantly drawing large supplies of water, saturated with plant food, from the soil, and carrying on a most complete system of drainage, not only from the immediate locality of the roots, but extending by natural cappillary action out into the soil. This principle applies not only to trees but to every growing plant, hence all weeds allowed to remain, even beyond the radius of root growth, either absorb directly or change the natural current of drainage from the roots. You know the necessity of clean culture in the cornfield, how that a small growth of weeds will check the luxuriance of the growing crop until the stalk reaches maturity and the grain begins to form. This applies with equal force to the young tree. By this, however, we do not mean thorough culture through the entire space between the trees, without using the soil for other growing crops. Small trees are planted at wide distances in view of their future growth and the space they will occupy when fully grown, so a large part of the land thus unoccupied in their early growth is only waiting for their future use. But we have seen that the feeders (fibrous roots) are constantly reaching out into new soil, enlarging annually the circumference of root growth, so the crops grown in the young orchard, after the second year, should be planted farther away from the trees in order to give the now rapidly increasing roots all possible encouragement, and the full benefit of all the soil they can use.

We cannot give plain directions in detail, applicable to every variety of tree, soil, climate and location, because local influences would defeat this plan, even if the space allotted to this work would allow it. But for general practice we would say: First, thoroughly prepare your tree soil, as you would for a premium corn crop, and plant your tree according to instructions already given; mulch a space three feet square around the tree, and cultivate your land in root crop, or corn—*avoid the small grains and beans*—planting the first and second years not nearer than three feet (more if in corn) and increasing the distance six inches to a foot annually, for three years more, according to the growth of your tree, always remembering that in the long run it will be economy to give the tree the benefit of your doubts, if you are not certain as to the proper distance, and to keep your soil as *good as at first*, or if poor, gradually improving.

This carries you up to the sixth year of the orchard life of your tree, and a time when we will suggest a change of treatment, and will incur the ridicule of some cultivators; but a wide range of observation, the teaching of practical experience, and the judgment

of our oldest and most successful fruit growers, confirms our assurance of its advantages. The head of your tree now presents considerable surface to the force the wind. The feeders have extended to a greater distance than the branches from the body; the larger roots require more substantial bracing than the soil alone. The temporary mulching has prepared a suitable bed for its growth, which may now be replaced with a heavy seeding of blue grass over a space of 3 to 5 feet in every direction from the tree, still leaving, if desired, a space for cultivation, which should be rapidly narrowed down for two or three years more, when we would say seed your *entire orchard to clover*. This may have been done without disadvantage at any time after the fourth or fifth year from planting, and should not under any circumstances be deferred longer than eight or ten years, as the roots are then fast reaching over the entire surface of soil, and nature has provided in this grass the finest of mulching, which should now be constantly applied.

Your orchard is now completely established, and should be bearing moderate crops of fruit. This will depend, however, upon the local influences of soil, location and growth. If your trees are very thrifty, they will be longer coming into bearing, and the treatment we have advised has a tendency to promote this result; but its long life and fruitfulness will much more than repay the small loss of time occupied by the vigorous preparatory growth of the young tree. The heavy crop of corn requires a long season for its growth and maturity. You may put your colt to hard labor, and he can perform it under the lash; but for every day of hard service you compel the colt to perform, you lose two in the future horse. If your neighbor's trees, with poor attention and a stunted growth, produce fruit while yours are yet barren, remember that it is the perfectly natural result of the different methods of treatment under which they have grown, and that your orchard is laying up a store of vitality which will make it prolific, and extend the period of its "prime" beyond the time when your neighbor's trees will cease to cumber the ground.

The orchard to which you have given this close attention will now be a constant source of pleasure and profit, and the advantages you would have derived from the land if not thus occupied, are but little impaired, and it may be, by the additional fertility of the soil, somewhat improved, as it now furnishes excellent pasture, and the falling fruit is readily eaten by hogs, which, with some device to keep them from rooting, should be kept constantly in the orchard during the premature falling of fruit; or, if this cannot be done, the fallen fruit should be gathered up every day, and all refuse fed to stock or carried away from the orchard. This destroys thousands of insects, which would otherwise multiply rapidly, and

materially reduce (often one half) the crop of perfect fruit the orchard would otherwise produce.

All foregoing remarks apply specially to the apple. Changes will be noted where required.

TREE FRUITS.

The Apple.

For a combination of all the qualities which make fruit desirable—we may say indispensable—the apple stands pre-eminently at the head of the list. Its adaptability to every climate and every variety of soil, its healthfulness and generous fruitfulness, its wide range of flavor and quality, adjusting it to every taste and condition of the system, and chief among excellent qualities, its endless season, extending in its fresh, natural condition throughout the year, make it of all fruits most to be desired. This fact is being attested by the immense number of apple trees being annualy raised and sold by the nurseries throughout our country. Farmers are realizing the great value and economy of this fruit as food for hogs, and it is now an easy thing to obtain a succession of ripening in sweet apples which will carry stock through the season from early in July until heavy frost, without any attention whatever, and with little trouble almost throughout the winter, at an expense of less than one-half the cost of any other method.

It is unnecessary here to enter into a detail of the profits arising from fruit culture. A small calculation, or reference to any ener-

getic fruit man who has followed the business for a series of years, will show in a moment that at the lowest market price, an average crop of apples, on average farm land, will pay a larger net profit than any ordinary farm crop. If you urge the objection that the labor usually expended on farm crops is lost, we would suggest the manufacture of vinegar. A good quality of cider vinegar is never a drug upon the market, and it will increase the value of your apples to about one dollar per bushel. These figures are not fictitious, and can be easily attested at any time. We have seen a realization of fifty dollars cash and a surplus of apples enough for family use, *through the year*, from a town lot of less than an acre of land. A neighbor, an excellent farmer, who suffered the loss of fruit trees, fences, a large barn roof, damage to out-houses, the almost complete destruction of yard of ornamentals, and about one-fourth of his apple orchard, in a recent storm, remarked, "The only thing I feel like I couldn't replace is the apple trees; they are my greatest loss."

Perhaps the best distance for planting apple trees, all things considered, is about 33 feet. This gives each tree over 1000 square feet of ground room, and it will be many years before they will interfere with each other at that distance. Some planters hold to the old time space of 40 feet, and there will come a time in the life of the tree, or orchard, when, if in strong soil, its productiveness and chances of long life will be enhanced by this wide space between the trees. This will do if you are planting for posterity, but for your own use you will obtain more fruit from 40 trees 33 feet apart than from 30 trees 40 feet apart.

As you examine the catalogue of any large nursery, you will be impressed with the large number of varieties, nearly all highly recommended, and perhaps many of which you have never heard; and in the selection of an orchard you are tempted to try as many of them as you can accommodate, for the sake of novelty, and hoping you may find something better than any kind you have in bearing, or have heretofore known. This is well enough if you will confine yourself to a small number of the new kinds, and trust the nurseryman's judgment for the selection. You should have a few of each new variety, as this is the only way to test their merits in your locality; but for your general planting, buy *the varieties you know to do well* in your own neighborhood, or, what is better, leave your selection to the nurseryman, remembering that the long list of varieties you have seen in the nursery catalogue is designed for a variation of two or three hundred miles of latitude, while in a much shorter space, with some local differences, one might be valuable and another worthless. A Rhode Island Greening, and other apples of its class, suitable only for the extreme northern

limit of our country, would be about as valuable for fruit in Kentucky as a water beech, and yet there is usually a louder call for northern apples south than north.

And there is one other point worthy of special notice here, which is the fact that no man, without a more intimate knowledge of fruits than our farmers generally have the means of obtaining, is likely to select a fruit list that will secure him a succession of ripening throughout the season. What has been said of sweet apples for stock is equally true of your family orchard, from which, if properly selected, you can obtain a succession of ripe fruit of excellent quality *throughout the year*. This matter is carefully studied by the nurseryman, first in the grafting and budding of trees, and, when submitted to his own judgment, in the filing of orders, and his reputation and success in business depend upon his fidelity to his customers, and the promptness and accuracy with which he meets the wants of the people. Hence the absurdity of the supposition so often indulged, that he fills orders at all hazards, regardless of variety.

It is well known that to secure a prompt and regular market for any kind of produce, the supply must be sufficient to create a "current" of demand. If you are a potato grower, and every year put upon the market 500 or 1000 bushels of a good variety of choice potatoes, the constant supply and the certainty of it will create a demand for your produce far beyond the realization of the smaller markets around you, and the competition thus centering in your trade, spring and hold up your prices regardless of the ordinary market fluctuations. So with fruit. The larger your supply the more easily you will find a market for it; and the less your number of varieties, the greater will be the regularity with which you can supply it, and the labor of handling will be much reduced; so, we repeat, buy only such varieties as you know to be profitable, or, leave your selection to the nurseryman.

There has been in the past a very reasonable objection to the planting of apple trees in small spaces, on account of their long period of growth, and large size when at maturity. This is now entirely removed in the propagation of dwarf apple trees, which bear two or three years after planting, and produce heavy crops for many years, occupying but 8 or 10 feet of space, and making a very handsome ornamental tree.

The Pear.

No other fruit in the length of its season, its great variety and adaptation to the wants of the people will compare as favorably with the apple; while in productiveness and long life it surpasses

it, and for richness and delicacy of flavor it has no equal among fruits. It is propagated both as dwarf and standard; and for the planting of standard pear trees, with some deepening of the hole, the general directions already given are sufficient. In the planting of dwarf trees the only particular difference to be observed is placing the junction of the pear tree and quince root below the surface of the soil. This will protect the junction, which is the most tender point and give you, in its early life, all the advantages of the dwarf tree, and often send out roots from the pear wood, thus making a standard tree when the dwarf would be on the decline. Standard trees should be planted 20 to 25 feet apart; dwarf 10 to 12½ feet, so in case of the double rooting one-half of the trees may be cut away, leaving an orchard of standard trees.

The pear has always had a market at the most paying prices, the finer varieties often reaching up to $15 or $20 per barrel, while very fine specimens have sold in New York at $60 per barrel. These figures, of course, cannot be relied upon for general sales; but they show the estimate placed upon this fruit in the larger fruit markets, and the opening thus offered for successful pear growers to realize handsomely upon their investment.

Blight is the greatest enemy of the pear tree. If your trees blight cut off the blackened limbs entirely below the stain and burn them. If your soil is naturally strong do not add any manure. If light—and we think a light, warm soil preferable for the dwarf pear—give an occasional top-dressing of manure. After three or four years of thorough cultivation, seed the standard pear orchard down to clover, always allowing the second crop to rot on the ground; but the highest success in dwarf pear culture has been attained by *constant thorough* cultivation, and the annual shortening in one-half of the previous years growth. Allow the dwarf to branch out near the ground. The standard may be trimmed up without disadvantage, if desired. There is one feature about the ripening of the pear wherein it differs from any other fruit, and makes it very desirable in places where fruit is liable to theft. This is the property of ripening more perfectly in the house than on the tree; and many kinds that are only ordinary, if allowed to ripen on the tree, acquire the highest flavor and richest aroma when matured upon the shelves of the fruit room. This applies to every season, summer as well as winter; and the proper season for gathering is when, upon gently raising the fruit, it will separate easily from the tree. It should then be removed to a dark, cool room and laid separately upon shelves. And the man who has never thus ripened a pear may then enjoy such a luxury in fruit as he never has before.

The Peach.

This fruit is well known everywhere south of the 40th parallel, and is grown successfully, in favorable locations, at a much lower latitude; and so profitable has it proven under proper management that peach growers who have made it a business have found it to pay well when they have gathered but one full crop in five years, while for family use it is indispensable. Unlike the apple and pear, its season is short, continuing only through the summer and early fall; but the tree is very productive, and the fruit, either dried, canned or preserved, retains its flavor in a remarkable degree. Except in planting, the entire mode of treatment is different from that of the apple. The tree as it goes into your hands is usually of but one year's growth, and you will find upon the body a succession of buds and branches, alternating from bottom to top, and beginning with buds. Your first operation is to cut off all the limbs, leaving the body straight and smooth, and then cut off the body just above the set of buds from which you wish to form your head. From these the tree will push out a healthy, symmetrical top, in exact proportion to the vitality of the roots; and you will be surprised to see how quickly you will have a strong, evenly-headed tree. The height of the head from the ground has little to do with the bearing capacity of the tree. Yet there is a wide difference of opinion, or theory, we think without much foundation, as to the proper height of a peach tree head; perhaps owing, chiefly, to the advantages of a high tree on low ground, where the fruit is often confined to the highest branches, while that on low limbs or low trees is generally destroyed by frost. This might be duly considered in low-ground planting, where it is impossible to do better. But in favorable situations, on high grounds, where the height of the tree would afford no protection from frost, we would give the low head the preference. From the low tree you can often gather the entire crop of fruit without the use of a ladder or other means of elevating yourself. The limbs, though often growing to considerable length, preserve a uniformity in size and strength, allowing them to bend under their load of fruit without breaking; or, if necessary, making it easy to prop them up, while the wider opening of the head admits sunlight and secures the even ripening of the fruit. The low tree is less liable to injury by storms and more easily trimmed, while the imaginary objection that the fruit is less perfect is entirely exploded by the experience of our largest peach growers, who say that they gather the finest of fruit often from very low branches, and sometimes resting upon the ground.

Wm. F. Willey, Esq., one of the largest and most successful peach growers in Southern Indiana, *starts his limbs from the*

ground, and an experience of thirty years devoted to peach growing confirms him in the practice. To do this it is necessary to cut off the body at planting *below the lowest set of limbs*, when all future attention required is to allow only such growth as you wish to form your head, and when in bearing, if very thrifty, to shorten in the previous years growth about one-half. Another requisite in the production of perfect fruit is thinning when heavily loaded. This is most readily done when the fruit is about as large as quails' eggs, by a sweeping stroke on one side of the limb with a light pole, or more carefully, in small orchards, by hand, as in this way you can remove all imperfect fruit. The crop, if full, may be reduced in this way often one half; and this thinning, severe as it may seem at the time, except in seasons of great scarcity, will always add to the money value of your entire crop.

The greatest enemy of the peach tree is the "borer," a white grub, hiding itself under the bark just at the surface of the soil, sometimes girdling the body entire and killing the tree. Its presence may be detected by the "gum" or jelly issuing from the wound, and where this is seen the borer may generally be found by scraping off the gum and dead bark by which it is protected. Another method practiced by some cultivators, indiscriminately upon all their trees as a means of protection and cure, is to pour boiling water about the body of the tree at the ground. This does not injure the tree and is attended with the best results. Another preventive, less troublesome, and we think adopted by Mr. Willey, which should be a sufficient guarantee of its success, is the sowing of blue grass seed close about the body of the tree; and we may add, from the same high authority, the necessity of *constant, thorough, broadcast* cultivation.

The Cherry.

This is the earliest in ripening of the tree fruits, and is universally esteemed for tart or desert, while its earliness, its freedom from disease, and its regular and prolific bearing, make it desirable both for home use and for market; and of all fruit trees, when properly planted, it requires the least attention. The one condition of its healthy growth and fruitfulness is a dry, sandy, or gravelly, soil. It is very impatient of wet land and short-lived when thus exposed, but planted in dry ground it lives almost with the apple; bears in two or three years from planting, and continues to bear regular and heavy crops of fruit for an indefinite length of time. It requires no pruning except to cut away an occasional dead or crossing limb; is better with little or no cultivation and requires no other attention except an occasional application for

borees. It is grown in sufficient variety to suit every taste, and is too well and favorably known to need any recommendation.

The Plum.

It ranks with the finest of our tree fruits, and, except for its enemy in the curculio, would be universally grown for its excellence in flavor and great productiveness. The ravages of this insect, however, make a serious drawback in the production of the finer sorts, as persons who are not regularly engaged in fruit growing are apt to neglect the very necessary precautions in the pressure of spring work—just at the time when constant attention is required to produce a crop of fruit. The only curculio remedy which has proved entirely succeesful is to catch and kill them. They begin to sting the fruit as soon as the blossom falls, and from four to six weeks following this time spread a sheet under the tree early every morning; then strike a sharp blow with a mallet upon the stump of a limb sawed off for the purpose, when the insects will fall into the sheet and must be destroyed. This must be done *early*, as a little sunlight warms them up, so the disturbance causes them to fly away only to return again. Failure to do this is generally failure to secure a crop of plums; but if persevered in, the returns of fruit will amply compensate for the trouble. Hogs kept constantly in the orchard during the fruit season will aid materially in the destruction of insect life. The efforts of fruit growers have been directed for years to the production of a variety which, retaining the fine flavor and size of the finer kinds, would be less liable to injury by the sting of the curculio and possess the hardiness of tree and bearing qualities of the chickasaw family. This end has been reached in the propagation of the Wild Goose plum; and from this variety it is possible to obtain full crops of fruit without the precautions necessary in the more tender kinds, though with this the same care would *insure complete* success. The plum flourishes in a heavy clay soil, without much cultivation and is grateful for an occasional top-dressing of common salt. Plant 15 to 20 feet apart.

The Quince.

For preserving and as a flavoring for other preserved fruits, the quince has no equal, and in its peculiar pleasant flavor, no substitute among fruits. It thrives best in a rich, moist soil, with occasional top-dressing of good manure, and is better of cultivation in its early life, though needing little pruning except to preserve a moderately open head, and cut away small dead branches which will frequently occur. The tree is of long life, and when in bearing

continues to produce heavy crops for many years, and has proven very productive when given the refuse of the wash-house, with an occasional application of common salt. It always finds ready sale in the market, and will bear shipment with ordinary care almost any distance without injury.

SMALL FRUITS.

We now approach the consideration of a class of fruits applicable to every locality and situation, requiring, as a rule, less care than the ordinary garden or field crops, and yielding so abundantly that a very small space planted, with only fair attention, will yield enough for family use throughout the summer, and often make a handsome return from the surplus fruit in market. Yet we find only a few farm gardens even moderately supplied with these luxuries; or what would be regarded, if its value was known, from a medical standpoint, as one of the *indispensable necessities* of the farm or household.

A farmer who has tried both ways, writes to a farm journal as follows: "After I had farmed a few years in this style (without fruit) I planted a half acre of strawberries in the spring. That season I gave it the same culture as I did my corn. The next season was not favorable for a crop, but after using what we could I sold the balance and found I had about $90 left clear of expenses. That season I did not bother with them at all, but let them have their own way. And the next spring, after using what we wanted for table use (about six quarts per day) and canning, and paying

expressage to the city, and five cents per quart for selling, I had $216 left." And he adds: "But don't plant strawberries alone; plant also raspberries and grapes. With these three varieties you have a continued supply of fresh fruit from early in June until frost."

The Strawberry.

In the list of small fruits the strawberry is the first to ripen, and it is easily raised and very prolific. It is probably safest to plant in the spring; but in this case you need expect no return in fruit until the following year, when you will have a fair crop. Fall planting, if favorable, will yield something the next season; and if planted immediately after the bearing season, you may expect about half a crop. It thrives best in a sandy or gravelly loam, and has yielded with this soil and proper care in cultivation over two hundred bushels per acre. For field culture plant in rows 3½ feet apart, setting plants 15 inches in the row. This gives about 12,000 plants to the acre. Allow the runners to root for about nine inches each way, when they will form a solid bed in a year from planting, which, with a mulching of spent tan or sawdust, will remain in fair condition, if on previously cleaned land, for two to four years, when it should be reset in another place; the old bed allowed to remain until the new one comes into bearing, and then broken up and used for other planting until needed for another removal of strawberry plants. Whatever the mode of planting, the beds should remain undisturbed, except by the pulling of weeds, until the bearing season is past, when it should be kept scrupulously clean and cultivated through the remainder of the season. Bear this in mind: Let your bed go into the winter *clear of weeds*, and, if on fair dry soil, you may expect a full crop of berries every year. Another precaution which will often add much to the quality and quantity of the fruit, is covering the beds with clean straw, eight or ten inches deep, late in the fall and removing it when danger of frost is past in the spring. The straw should be entirely free from weed seeds, and is at hand on nearly every farm and its use will pay largely in the increased yield and fineness of fruit, and sometimes save the vines from destruction by frost.

The Raspberry.

The raspberry follows the strawberry in its season of ripening, and affords a succession of fruit specially adapted to the season and to the wants of those having but a small space to devote to fruit culture, as it thrives well in any good soil and may be planted along the garden fence, which will answer all the purposes of an

expensive trellis and thus occupy but little space that could be otherwise profitably employed. When thus planted it is difficult to cultivate and will repay heavy mulching. For field culture plant in rows six feet apart and three to four feet in the rows. Check the growth of the canes when three feet high by pinching in, and the following spring cut off the side shoots to a foot in length. Remove the old stalks, and, if more, all but four of the strongest new canes and tie them together, forming a stool about ten inches in diameter. This is most readily and cheaply done with small wire cut in lengths of thirty inches and bent in fish-hook shape at each end. This placed about midway of the canes forms a firm support, and the same wires can be used for a number of years. It is better to mulch heavily along the row, as you can not cultivate very close, and then cultivate thoroughly between the rows, avoiding much disturbance of the roots until the bearing season is past.

The Blackberry.

The blackberry requires the same care as the raspberry, and should be planted in rows seven feet apart.

The Gooseberry.

In season for cooking this fruit precedes all others, as it makes a very good sauce from 20th to last of May, at a time when the system requires a fruit acid and when there is usually a dearth of fruit. It enjoys a warm, rich soil; should be planted four by seven feet and be well mulched and cultivated. It requires no pruning except pinching in in June and keeping off all suckers, and is best trimmed in tree form with a body of six inches. This plan will secure the finest fruit; but where this is not an object, the *amount* of fruit will probably be increased by allowing it to become a "bush," starting with many brances from the ground. A dozen plants, making a row fifty feet in length, in connection with other fruits, will produce a supply for family use and occupy only a small part of a family garden.

It is not our intention in this work to enter into a discussion of variety, but of the gooseberry we would advise for general planting only the native sorts—"Houghton," "Downing" and "Mountain Seedling"—as they are more hardy and productive, and with proper treatment, to-wit: plenty of sunlight and good cultivation, entirely free from mildew.

The Currant.

This plant thrives in any good garden soil, and will bear heavily in almost any location, hence the common practice of planting it in the shade of trees or by the fence, and the moisture and shade thus afforded seems rather than otherwise to increase the size of the fruit. But this is always attended with a corresponding reduction in the amount and quality, and persons who have never grown it in open ground, with clear cultivation, can have no idea of the improvement in richness and flavor of the fruit thus produced. Plant in rows 6 feet apart, setting plants 4 feet in the row, or, for garden culture, where the horse cultivator is not used, the planting may be a foot closer—and this remark applies to all other small fruits—but it is always desirable, when practicable, to cultivate by horse-power, as it is more quickly and thoroughly done. Leached ashes is the best manure for the currant, and ought to be intimately mixed with the soil before planting. If this has not been done, it may be applied to the surface and hoed or plowed in at any time. Like the gooseberry, it will give the most satisfactory results in the form of a tree, with 4 to 6 inches of body. At planting, all sprouts and buds below the surface must be rubbed off, or they will give continual trouble afterwards. After forming a head of sufficient size, there will be a constant tendency to make water-sprouts, that should be pinched off as they appear, or, if the head is too open, may be allowed to grow to a few inches and then pinched in. White helebore will destroy the currant worm, if it makes its appearance.

The Grape.

Man has been a vine-dresser from the earliest ages. When the Ark rested and the waters were ebbing from the warm slopes of Ararat, "Noah began to be a husbandman and he planted a vineyard" in the rich debris of the flood, and, in his gratitude for deliverance and promised prosperity, he drank too deeply, setting an example which his posterity have followed diligently ever since. But the curse has rested upon those who have abused this great blessing, and the vine has continued healthy and fruitful and is to-day more widely disseminated than any other fruit-producing plant, and, unlike many others, the improvement of the fruit has only kept pace with a corresponding increase in the strength and fertility of the vine; so that the care which a hundred years ago was a necessity in the production of an average yield, will now insure the most bountiful returns.

Much has been written and wisely, too, upon grape culture; but

in tracing back the instructions upon this head through this and part of the last century, they will be found to apply, chiefly, to those engaged largely in the business of grape growing for wine or market, and who, it is supposed, will give it their exclusive attention, for the sake of the largest possible yield from a given space. This is, of course, always desirable, but requires more care than the farmer or man of business can bestow upon his vineyard, as without it, the very means employed to promote the greatest yield of fruit may result in the destruction of the crop. Hence, as there are many elaborate works upon this subject within easy reach of those intending to engage largely in grape culture, what is said here will apply chiefly to the man who plants a small vineyard for family use, or a limited market, and has but little time to devote to their cultivation and training.

The vine thrives best in a warm, light soil, of limestone formation. Before the introduction of the earlier ripening and hardier varieties, it was found necessary to carefully avoid the addition of manure, except by the natural decomposition of some light mulching material, such as chaff, short straw, etc. But the necessity of constant mulching was very forcibly argued by French vine-growers a hundred years ago; and while this precaution in the application of manure is much modified by the improvement effected by modern crossing and the propagation of new varieties from seedlings of special merit, it is still found much better to thoroughly incorporate the manure with the soil by deep cultivation for two or three years previous to planting than to manure at planting, or any future time, except by light top-dressing, or, as before stated, the gradual rotting of the mulch. Some planters have been eminently successful by turning under successive crops of clover until their soil was in good condition, and continuing the same treatment annually after planting, plowing at such a time as the ripening seed would insure another set of grass; others by mowing the first and allowing the second crop to rot on the ground. But under other conditions of soil or location, this method has proved a failure; and probably the only advice applicable to every case would be to plant in a warm, light, fertile soil, followed by top-dressing and thorough cultivation or mulching, and an occasional application of slaked lime to the entire surface of vineyard soil.

The vine, with some encouragement, roots deeply; and this feature seems to be a provision of nature to guard against the combined effect of excessive moisture at the surface and the heat of the sun, to which the ripening fruit is very sensitive; and where the highest flavor and perfection of fruit is desirable for the production of the finest wines, it has been regarded as an important part of the cultivation to annually sever the surface roots from the vine,

leaving only those which extended to a depth beyond the influence of sudden changes of temperature and humidity. Hence in planting it is important to set the vines deep enough to accommodate, in their natural position, or with some depression, all the roots, and give them the benefit of a thorough preparation of soil to the same or greater depth. What has been said (page 7) about mixing manure with the soil used in filling the hole in the planting of trees, is even more applicable to the vine, as the roots of this plant are more tender and sensitive to changes of every kind, and extend themselves in a much more rapid proportion to the wood growth while young, than occurs in the tree. To show the importance attached to this point, I cannot do better than to quote from a very early and authentic authority, a writer in "Young's Annals of Agriculture," published just a hundred years ago. He says: "But here I must clear up a point which has led many people into mistakes, and rendered this work more tedious, and that is the throwing into the holes in which the vines are planted rich mold mixed with old dung, thinking that this must be a great advantage to the vine. This is a great mistake, for as soon as the vine shoots its roots beyond the rich mixture into the common soil, which is many degrees poorer and colder, the roots shrink back, as it were, at a coldness and poverty they have not been used to, and the vegetation is stopped, and the plant dwindles into poverty and barrenness. And if you examine the plant at the bottom you will find that instead of extending its roots to their usual length, it has shot out a great number of small fibres, like threads, which extend no further than the good mould; and these being quite insufficient to answer the demands of nature, the plant perishes, or remains in an inactive and barren state; whereas, had the vine been planted in common soil at first, it would have met with no alteration, no sudden change to check its growth. This shows that the soil should be well mixed. And let me tell you, once for all, that the vine delights in a warm, comfortable, fruitful soil, but proves unfruitful and perishes in a soil cold and barren. Yet a soil may be too rich or made too rank by dung, and this extreme is also to be avoided."

In the foregoing remarks it has not been the intention to discourage the planting of vines upon any soil except such as is specially adapted to their growth, but to give such directions as would enable those who have a variety of soil to choose their location intelligently, and to save from disappointment such as would engage in vine growing largely *without* these conditions. The vine will bear fruit, though sometimes inferior in quality, in almost any soil, and the freedom of its growth, the small space it occupies, and medicinal virtues of the grape, should impel every man, whatever

his soil or location, to plant a few vines, as it will be of profit.

The operation of pruning is at once simple and complex. To trim in a way that will secure a healthy growth of vine, and moderate bearing, with a limited degree of attention and labor, requires but little skill or labor; while to bring into activity *all* the powers of the vine, obtaining the largest quantity of the finest fruit it is capable of producing, demands the closest attention, and a degree of experience and study incompatible with the ordinary duties of farm life. And as such instruction can be found readily elsewhere, and is not within the province of this work, we will confine ourselves to the former method.

Before saying more upon this subject, however, let us refer again to the inexorable law of nature, that for every strain upon the vitality of plant or animal before maturity, it pays the heaviest penalty in the limit of its future usefulness. The vine will often bear at two years old, but this early fruitfulness will always retard and sometimes entirely check the growth; and while elated with his early prospect of fruit, the disappointed planter will *wonder why* his vine fails to grow, and blame the man who "cheated him out of" the small sum it cost him. The vine often makes a feeble growth the first year after planting. If *very* weak it should be cut back to two buds (never to one, as the first bud often fails to grow). If moderately vigorous, and two vines are desired for trellis training the following year, three buds may be left; but we would never advise this treatment, for, we think, as a rule, that there is more lost than gained by it. During the second season, if impatient to see your vine forming upon the trellis, it may be trained in the way you expect it to go, and held in that position by pieces of soft leather passed around it and tacked firmly with one small nail to the wall. But you will lose nothing in time by again cutting it back to the number of buds you wish to form vines, and beginning the training with the third year's growth. If, however, you *do* permit the growth of the second year to remain, strike off all bloom setting upon it the third year, and throw the whole force of the vine into a continuation of wood growth. The following season you may have a moderate setting of fruit without any serious injury, if the plant is thrifty, and if properly trimmed this matter will hereafter take care of itself.

The easiest method of training is upon a single trellis, and for this purpose the side of an out-house or the top of a garden fence may be often used by the farmer with good results. If the side of a building is used, the vine may be allowed to form one, two or three leaders (stationary vines), according to the space to be occupied, and these leaders may be trained either vertically to the top of the building, or to any height desired, and then at right angles

across the wall. In either case a distance of 4 to 6 feet should be left between the vines intended to remain. The annual trimming should be performed soon after the falling of the leaves, and never later than in February, and when trained as above, the previous season's growth should be cut back within two buds of the leader.

Where more extensive planting is intended, as for a small vineyard, a system of stake training is in every way most desirable, as it involves the least labor in the care of vines, and renders thorough cultivation easy. In this case plant 6 feet apart each way, and cut back the first and second year's growth to a single growing bud (always remembering that the first bud may be inert), tying your vines, as they grow, to temporary stakes, for protection during cultivation. The third year you may allow a single vine to remain for bearing the following year, when it will be necessary to set permanent stakes for the support of the bearing wood. The fourth year another vine must be started from the lowest bud, and supported in its growth by the temporary stake, which should be kept in place for this purpose. This vine is intended for bearing the following year, and when eight or ten feet long may be pinched off, which will cause it to mature before there is danger of injury from frost. About 6 feet is the right height for stationary posts, and it will be found convenient to have holes bored, crossing each other, near the top, through which you can pass wooden pins to assist in the support of the vines. After passing over this support the terminal end of the bearing vine should extend within 2 feet of the ground, and this also should be tied to the post. This system of stake training simply involves following out the method just explained, with an increase in the number of bearing vines in proportion to the increasing strength of the root. The ratio of increase of bearing wood must be controlled by the judgment of the cultivator, as no directions can be given applicable to the variety of soil and treatment they would encounter. Two vines may be tied on opposite sides of the same post, and a third, and even a fourth may sometimes be crossed at right angles, but it is best to avoid a great accumulation of foliage and fruit, and where more than two or three vines are allowed to fruit, it will be found better to use two stakes for their support. Where winter protection is necessary, the vines may be loosened from the posts, bent carefully down to the ground and covered with straw, and a light covering will often afford great protection.

As to a favorable exposure in planting, there can be little said which would lead to a definite conclusion, as its influence seems to be much modified by circumstances, and every exposure has proven favorable at different times and places. But whatever your soil, location or circumstances, we would say, plant a few vines, and

enjoy under their shadow a luxury, the excellence of which has made it, in all ages, an emblem of fruitfulness and unity.

Distances for Planting.

Apple	33 feet	Strawberry	1 x 3½ feet
Pear, standard	25 "	Raspberry	4 x 6 "
Pear, dwarf	12½ "	Gooseberry	4 x 6 "
Peach	15 to 20 "	Blackberry	4 x 7 "
Cherry	20 "	Currant	4 x 6 "
Plum	15 to 20 "	Grape	6 x 6 "
Quince	12 to 15 "		

EVERGREENS.

It has not been many years since most of the finer evergreens, now so generally known, and forming a prominent figure in nearly all lawn decorations, were comparatively rare. Years of experiment proved that many of the heavier leaved, close growing, foreign varieties, grew to perfection when transplanted to our soil, while their density, their rapid growth, their symmetrical form, and comparative freedom from the formation of limbless trunks, makes them in every way more desirable both for ornament and utility than the native varieties. As an ornamental tree, their chief beauty is in their evergreen foliage, from which they derive their common name.

A common error in planting all kinds of ornamental trees, is grouping them too closely together. As usually procured they are small, and in their distribution, at planting, it seems to be the special aim to observe the same proportions of distance to size that is desirable in trees of many years growth. So it frequently occurs that in a few years it becomes necessary to remove one-half of the trees, and thus break the variety and destroy the symmetry of the group. No inflexible rule can be given for this, as the same variations occur in their habits of growth, owing to variety, soil and pruning (or the neglect of it), that are found in decidious trees. But it is safe to say, that with ordinary attention in trimming they should never be planted closer than 15 feet for the compact varie-

ties and 20 to 25 feet for the strong, thrifty growers. And this applies with equal force to the distance of trees from buildings and especially dwellings, as a tree which would not in many years come in direct contact with the house, might soon obscure the view of a fine landscape in the same line of direction.

But to beautify our yards is not the only office of the evergreen. The intelligent farmer is prompt to acknowledge the great saving of food by the provision of a suitable shelter for his stock from the severity of our northern winters. This, of course, is best effected by the building of good barns; but particularly upon the open prairie, and in the Western States where the cost of building material is heavy, and the means and energy of the farmer are absorbed in the development of his farm, this is impracticable, and it becomes an interesting question, how, in a short time and at small expense, to provide a substitute. We answer without hesitation, in the growth of the evergreen screen. This, of course, will not turn aside the rain, and only imperfectly the snow, but will form an almost complete barrier against the chilling winds which often follow, and absorb more animal heat than rain and snow combined. For this purpose close planting is desirable, and for a complete wind-break double alternate rows thus ° ₀ ° ₀ ° ₀ ° with a distance of about 6 x 8 feet intervening, and the direction of the prevailing winds will always indicate the proper place and form of planting, where a complete enclosure is not attainable.

Another important feature is the protection of residences in exposed situations, and the consequent saving of fuel, and preservation of health. This has been repeatedly tried with the best results. In "Warder's Hedges and Evergreens," he says: "J. J. Thomas has stated his conviction, after considerable observation and actual experience, that on many bleak situations, at least one-half of the fuel consumed might be saved by planting twenty-five to fifty good evergreen trees across the sweep of the prevailing winds." This is certainly very high authority, and sanctioned by Dr. Warder and many others, may be placed in the front rank of evidence.

Evergreen roots will bear little exposure, and should be well protected in removal, as they do not readily recover from the drying effects of sun and wind. As taken from the nursery they have usually been removed several times, and by their successive root prunings, are well provided with a close fibrous root growth, and if carefully planted while yet dormant in early spring, which is undoubtedly the best time for transplanting them, they will scarcely realize the change; but with careful handling they may be moved at almost any time in the year. When the removal of large trees is contemplated, it will be found of great benefit to

trench around them, within two or three feet of the tree, early in the previous season, cutting off all side roots, and refilling the trench lightly. This will cause a growth of fibrous roots near the body of the tree, and while the earth is frozen hard during the following winter, it may be taken up and reset with the greatest facility (by again opening the trench and cutting the vertical roots), with nearly all the earth adhering to the roots. As the evergreen usually remains where planted, without cultivation, it is important that the soil be well prepared previous to planting. This should be done by deep and wide digging, and the addition of *well rotted* manure or ashes, or rich surface soil—avoid fresh animal manures—and ashes, if preferable, as a top-dressing.

To keep the tree in balance and preserve its pyramidal form, which is always desirable, cut back, while dormant in the spring, a part of the previous season's growth, and allow but one leader or terminal upright shoot to remain. This method of pruning will always be found sufficient if closely watched and exercised with good judgment, and should never be over-reached, as it requires a long time to recover from the evil effects of cutting back upon the old wood. By following out this system annually, all irregularities may be completely overcome and a symmetrical form preserved.

Conclusion.

As a nurseryman, the writer of the preceding pages has had frequent cause to regret the prevailing ignorance of the facts they treat of. It has often been said that the loss of trees sustains the business of tree raising; but there could be no greater mistake than this, for when trees are lost it usually reacts with doubled effect upon the nursery that sold them, and embitters the prejudice of the buyer against the trade everywhere. It is well known to tree dealers that the men who succeed best in the management of their trees are the most constant purchasers, and the intelligent salesman always looks to a community of successful fruit growers for his heaviest sales. Unfortunately for both, their number is comparatively small, and it was with the hope of increasing it, by placing within reach of the smallest planter, in a condensed form, such information as is indispensable to the fruit grower, and has heretofore been widely scattered through large and expensive fruit books, that this work was begun. With the same hope it is now submitted to the popular judgment.

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